1890MNRAS..50..127M

Ephemeris for Physical Observations of Mars, 1890. By A. Marth.

Greenwich Noon.		Angle of Position of ♂'s Axis.	Areographical Longit. of Centre of Disc.	Areographical Latit. of Centre of Disc.	Apparent Diameter.	q	Q	E	Light-ratio.
1890.									
Feb.	25	36°·58	183°·03	+10°·19	8″·24	0″·85	282°·53	37°·39	0·170
	27	36·43	164·04	9·85	8·38	·86	282·20	37·32	·177
Mar.	1	36·28	145·07	+9·52	8·53	·87	281·88	37·24	0·184
	3	36·13	126·12	9·20	8·69	·88	281·56	37·14	·191
	5	35·97	107·18	8·88	8·85	·89	281·25	37·02	·199
	7	35·81	88·26	8·57	9·02	·90	280·94	36·87	·207
	9	35·64	69·36	8·27	9·19	·91	280·63	36·71	·216
	11	35·48	50·48	7·98	9·37	·92	280·33	36·52	·225
	13	35·31	31·62	7·69	9·56	·93	280·04	36·31	·235
	15	35·14	12·77	7·41	9·75	·93	279·76	36·07	·246
	17	34·97	353·95	7·15	9·94	·94	279·48	35·81	·257
	19	34·80	335·15	6·90	10·14	·94	279·21	35·52	·269
	21	34·64	316·38	6·65	10·35	·95	278·96	35·20	·281
	23	34·48	297·63	6·42	10·56	·95	278·71	34·85	·294
	25	34·32	278·90	6·21	10·78	·95	278·48	34·47	·308
	27	34·17	260·20	6·01	11·01	·94	278·26	34·06	·323
	29	34·02	241·52	5·82	11·24	·94	278·05	33·62	·338
	31	33·88	222·88	5·65	11·48	·93	277·85	33·14	·355
Apr.	2	33·74	204·26	+5·49	11·73	·92	277·67	32·62	0·372
	4	33·62	185·67	5·35	11·98	·91	277·51	32·07	·391
	6	33·50	167·11	5·22	12·24	·90	277·37	31·48	·410
	8	33·40	148·58	5·12	12·51	·89	277·25	30·85	·431
	10	33·30	130·09	5·04	12·78	·87	277·15	30·18	·453
	12	33·22	111·63	4·97	13·06	·85	277·07	29·46	·476
	14	33·15	93·21	4·93	13·35	·82	277·01	28·70	·500
	16	33·10	74·83	4·91	13·64	·79	276·98	27·89	·526
	18	33·06	56·49	4·91	13·94	·76	276·98	27·03	·553
	20	33·04	38·19	4·93	14·24	·73	277·01	26·12	·581
	22	33·03	19·92	4·98	14·54	·69	277·08	25·16	·610
	24	33·04	1·70	5·05	14·85	·65	277·18	24·15	·641
	26	33·06	343·52	5·15	15·15	·61	277·31	23·09	·672
	28	33·10	325·38	5·27	15·46	·56	277·49	21·97	·705
	30	33·16	307·29	5·42	15·77	·51	277·72	20·80	·739
May	2	33·24	289·24	+5·59	16·08	·46	278·00	19·57	0·773
	4	33·33	271·23	5·78	16·38	·41	278·34	18·29	·808

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Grenwich Noon.	Angle of Position of ♂'s Axis.	Areographical Longit. of Centre of Disc.	Latit. of Centre of Disc.	Apparent Diameter.	*q*	Q	E	Light-ratio.
1890.	°	°	°	"	"	°	°	
May 6	33·44	253·27	+6·00	16·68	·36	278·76	16·96	0·844
8	33·56	235·35	6·25	16·97	·31	279·26	15·58	·880
10	33·70	217·47	6·51	17·25	·26	279·87	14·15	·915
12	33·85	199·62	6·80	17·53	·21	280·63	12·67	·950
14	34·01	181·82	7·11	17·79	·17	281·57	11·14	0·985
16	34·18	164·05	7·44	18·03	·13	282·80	9·57	1·018
18	34·37	146·32	7·79	18·26	·09	284·48	7·96	1·050
20	34·56	128·62	8·15	18·47	·06	286·94	6·33	1·080
22	34·76	110·94	8·52	18·66	·03	291·0	4·68	1·107
24	34·96	93·28	8·90	18·82	·01	299·3	3·05	1·132
26	35·16	75·63	9·28	18·96	·00	324·3	1·59	1·154
28	35·35	58·00	9·67	19·08	·00	37·6	1·34	1·172
30	35·55	40·37	10·06	19·17	·01	72·4	2·69	1·187
June 1	35·74	22·74	+10·45	19·24	·03	82·8	4·35	1·198
3	35·92	5·11	10·83	19·27	·05	87·62	6·06	1·205
5	36·10	347·47	11·20	19·28	·09	90·41	7·78	1·209
7	36·27	329·81	11·56	19·27	·13	92·30	9·50	1·208
9	36·42	312·14	11·90	19·23	·18	93·70	11·21	1·204
11	36·57	294·44	12·22	19·16	·24	94·79	12·89	1·196
13	36·70	276·70	12·53	19·07	·31	95·68	14·55	1·185
15	36·82	258·93	12·82	18·96	·38	96·43	16·17	1·171
17	36·93	241·13	13·08	18·83	·45	97·07	17·75	1·154
19	37·03	223·29	13·32	18·68	·52	97·62	19·29	1·134
21	37·12	205·40	13·54	18·51	·60	98·11	20·79	1·112
23	37·19	187·46	13·73	18·33	·68	98·54	22·24	1·088
25	37·25	169·48	13·89	18·13	·76	98·91	23·64	1·064
27	37·30	151·44	14·02	17·93	·84	99·24	24·98	1·039
29	37·34	133·35	14·13	17·71	·92	99·53	26·28	1·012
July 1	37·37	115·21	+14·21	17·49	0·99	99·78	27·52	0·985
3	37·38	97·02	14·27	17·26	1·06	99·99	28·71	·958
5	37·39	78·78	14·30	17·03	1·13	100·17	29·85	·930
7	37·39	60·48	14·30	16·79	1·19	100·32	30·94	·903
9	37·37	42·14	14·28	16·55	1·25	100·44	31·97	·876
11	37·35	23·75	14·23	16·31	1·31	100·53	32·96	·849
13	37·31	5·31	14·16	16·07	1·37	100·60	33·90	·823
15	37·27	346·82	14·06	15·83	1·42	100·64	34·79	·797
17	37·21	328·29	13·94	15·59	1·46	100·65	35·64	·772
19	37·14	309·71	13·80	15·36	1·50	100·64	36·44	·748

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Greenwich Noon.	Angle of Position of ♂'s Axis.	Areographical Longit.	Latit.	Apparent Dia-meter.	q	Q	E	Light-ratio.
		of Centre of Disc.						
1890.	°	°	°	"	"	°	°	
July 21	37·06	291·09	+13·63	15·12	1·54	100·61	37·20	0·724
23	36·97	272·43	13·44	14·89	1·57	100·55	37·91	·701
25	36·87	253·72	13·23	14·66	1·60	100·47	38·58	·679
27	36·75	234·98	13·01	14·44	1·63	100·37	39·22	·658
29	36·62	216·20	12·76	14·22	1·65	100·25	39·82	·638
31	36·48	197·39	12·49	14·00	1·67	100·10	40·39	·618
Aug. 2	36·32	178·55	+12·21	13·79	1·69	99·93	40·92	0·599
4	36·15	159·67	11·91	13·58	1·70	99·75	41·41	·581
6	35·96	140·76	11·59	13·38	1·71	99·55	41·88	·563
8	35·76	121·82	11·25	13·18	1·72	99·33	42·31	·546
10	35·54	102·85	10·90	12·98	1·72	99·09	42·71	·530
12	35·31	83·86	10·53	12·79	1·73	98·83	43·09	·515
14	35·06	64·84	10·15	12·61	1·73	98·56	43·44	·500
16	34·80	45·80	9·75	12·42	1·73	98·27	43·77	·486
18	34·51	26·74	9·34	12·24	1·72	97·96	44·07	·472
20	34·21	7·65	8·91	12·07	1·72	97·64	44·35	·459
22	33·89	348·54	8·17	11·90	1·71	97·30	44·60	·446
24	33·55	329·41	8·02	11·74	1·71	96·94	44·83	·434
26	33·19	310·26	7·56	11·58	1·70	96·56	45·05	·422
28	32·82	291·10	7·08	11·42	1·69	96·18	45·24	·411
30	32·43	271·91	6·59	11·26	1·68	95·78	45·41	·400
Sept. 1	32·02	252·71	+6·10	11·11	1·67	95·37	45·57	0·390
3	31·59	233·49	5·59	10·96	1·66	94·95	45·71	·380
5	31·15	214·26	5·07	10·82	1·64	94·51	45·84	·371
7	30·69	195·01	4·54	10·68	1·63	94·06	45·95	·362
9	30·20	175·75	4·01	10·54	1·61	93·60	46·04	·353
11	29·69	156·48	3·47	10·41	1·60	93·12	46·12	·344
13	29·17	137·19	2·92	10·28	1·58	92·64	46·18	·336
15	28·63	117·89	2·36	10·15	1·56	92·15	46·23	·328
17	28·07	98·57	1·79	10·02	1·55	91·65	46·26	·320
19	27·50	79·24	1·22	9·90	1·53	91·14	46·28	·312
21	26·91	59·89	0·64	9·78	1·51	90·62	46·29	·305
23	26·30	40·54	+0·06	9·66	1·49	90·09	46·29	·298
25	25·67	21·17	−0·53	9·54	1·47	89·56	46·28	·292
27	25·03	1·79	1·12	9·43	1·46	89·02	46·26	·285
29	24·37	342·41	1·72	9·32	1·44	88·48	46·23	·279
Oct. 1	23·69	323·01	−2·32	9·21	1·42	87·93	46·18	0·273
3	23·00	303·59	2·93	9·11	1·40	87·38	46·13	·267

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Greenwich Noon.	Angle of Position of ♂'s Axis.	Areographical Longit. of Centre of Disc.	Latit. of Centre of Disc.	Apparent Diameter.	q	Q	E	Light-ratio.
1890.	°	°	°	"	"	°	°	
Oct. 5	22·30	284·17	−3·53	9·00	1·38	86·82	46·07	0·261
7	21·58	264·74	4·14	8·90	1·36	86·27	46·00	·255
9	20·85	245·30	4·75	8·80	1·34	85·71	45·92	·250
11	20·10	225·84	5·36	8·70	1·32	85·15	45·83	·245
13	19·34	206·37	5·97	8·61	1·30	84·59	45·73	·240
15	18·57	186·89	6·59	8·51	1·28	84·02	45·63	·235
17	17·78	167·40	7·20	8·42	1·26	83·46	45·51	·230
19	16·99	147·90	7·81	8·33	1·24	82·91	45·39	·225
21	16·18	128·39	8·42	8·24	1·22	82·35	45·26	·220
23	15·37	108·87	9·02	8·15	1·20	81·80	45·13	·216
25	14·54	89·34	9·63	8·06	1·18	81·25	44·99	·211
27	13·71	69·79	10·23	7·98	1·16	80·70	44·84	·207
29	12·86	50·23	10·82	7·89	1·14	80·16	44·69	·203
31	12·01	30·67	−11·41	7·81	1·12	79·63	44·53	0·199

Q denotes the position-angle, and q the amount of the greatest defect of illumination, E the areocentric angle between Earth and Sun. The last column gives the ratio of the apparent brightness of *Mars* to that at mean opposition, the diminution of brightness due to the phase being assumed to depend simply on the proportion of the unilluminated portion to the whole of the disc.

The data of the ephemeris are founded upon the same elements as those for the oppositions of 1886 and 1888, and are to be interpolated directly for the times for which they are required, the equation of light having already been taken into account. The differences of successive values of the areographical longitude of the centre amount to one rotation and some 340 degrees, so that the greatest difference, at the end of May, is 702°·37, and the smallest, at the end of October, 700°·44.

The adopted zero-meridian will apparently pass the centre of the disc of *Mars* at the following Greenwich mean times :—

	h	m		h	m		h	m
Feb. 25	12	7·1	Mar. 6	17	57·4	Mar. 15	23	46·2
26	12	46·1	7	18	36·3	17	0	24·9
27	13	25·1	8	19	15·1	18	1	3·5
28	14	4·0	9	19	53·9	19	1	42·1
Mar. 1	14	43·0	10	20	32·7	20	2	20·6
2	15	21·9	11	21	11·4	21	2	59·2
3	16	0·8	12	21	50·1	22	3	37·7
4	16	39·7	13	22	28·8	23	4	16·2
5	17	18·6	14	23	7·5	24	4	54·6

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		h	m			h	m			h	m
Mar.	25	5	33·1	May	5	6	41·0	June	15	6	54·5
	26	6	11·5		6	7	17·8		16	7	31·0
	27	6	49·9		7	7	54·6		17	8	7·5
	28	7	28·2		8	8	31·3		18	8	44·1
	29	8	6·5		9	9	8·0		19	9	20·8
	30	8	44·8		10	9	44·6		20	9	57·5
	31	9	23·1		11	10	21·2		21	10	34·2
Apr.	1	10	1·3		12	10	57·8		22	11	11·0
	2	10	39·5		13	11	34·3		23	11	47·8
	3	11	17·7		14	12	10·8		24	12	24·7
	4	11	55·8		15	12	47·2		25	13	1·6
	5	12	33·9		16	13	23·6		26	13	38·6
	6	13	12·0		17	14	0·0		27	14	15·7
	7	13	50·0		18	14	36·3		28	14	52·8
	8	14	28·0		19	15	12·6		29	15	30·0
	9	15	5·9		20	15	48·8		30	16	7·2
	10	15	43·8		21	16	25·1	July	1	16	44·5
	11	16	21·7		22	17	1·3		2	17	21·9
	12	16	59·6		23	17	37·5		3	17	59·3
	13	17	37·4		24	18	13·7		4	18	36·7
	14	18	15·1		25	18	49·9		5	19	14·2
	15	18	52·8		26	19	26·0		6	19	51·8
	16	19	30·5		27	20	2·2		7	20	29·4
	17	20	8·1		28	20	38·3		8	21	7·0
	18	20	45·7		29	21	14·5		9	21	44·7
	19	21	23·3		30	22	50·6		10	22	22·5
	20	22	0·8		31	22	26·8		11	23	0·3
	21	22	38·3	June	1	23	2·9		12	23	38·2
	22	23	15·7		2	23	39·0		14	0	16·1
	23	23	53·0		4	0	15·2		15	0	54·1
	25	0	30·3		5	0	51·4		16	1	32·1
	26	1	7·6		6	1	27·6		17	2	10·2
	27	1	44·8		7	2	3·8		18	2	48·3
	28	2	22·0		8	2	40·0		19	3	26·5
	29	2	59·2		9	3	16·3		20	4	4·7
	30	3	36·3		10	3	52·6		21	4	43·0
May	1	4	13·3		11	4	28·9		22	5	21·3
	2	4	50·3		12	5	5·2		23	5	59·6
	3	5	27·3		13	5	41·6		24	6	38·0
	4	6	4·2		14	6	18·0		25	7	16·4

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	h	m		h	m		h	m
July 26	7	54·9	Aug. 28	4	43·2	Sept. 30	1	52·2
27	8	33·4	29	5	22·6	Oct. 1	2	32·1
28	9	12·0	30	6	2·0	2	3	12·0
29	9	50·6	31	6	41·4	3	3	51·9
30	10	29·2	Sept. 1	7	20·9	4	4	31·8
31	11	7·9	2	8	0·4	5	5	11·7
Aug. 1	11	46·6	3	8	39·9	6	5	51·7
2	12	25·3	4	9	19·4	7	6	31·6
3	13	4·1	5	9	59·0	8	7	11·6
4	13	42·9	6	10	38·5	9	7	51·6
5	14	21·7	7	11	18·1	10	8	31·6
6	15	0·6	8	11	57·7	11	9	11·6
7	15	39·5	9	12	37·3	12	9	51·6
8	16	18·5	10	13	16·9	13	10	31·6
9	16	57·5	11	13	56·5	14	11	11·6
10	17	36·5	12	14	36·1	15	11	51·7
11	18	15·5	13	15	15·8	16	12	31·8
12	18	54·5	14	15	55·5	17	13	11·8
13	19	33·6	15	16	35·2	18	13	51·9
14	20	12·7	16	17	14·9	19	14	32·0
15	20	51·8	17	17	54·6	20	15	12·1
16	21	30·9	18	18	34·3	21	15	52·2
17	22	10·1	19	19	14·0	22	16	32·4
18	22	49·3	20	19	53·8	23	17	12·5
19	23	28·6	21	20	33·6	24	17	52·7
21	0	7·8	22	21	13·4	25	18	32·0
22	0	47·1	23	21	53·2	26	19	13·0
23	1	26·4	24	22	33·0	27	19	53·0
24	2	5·7	25	23	12·8	28	20	33·5
25	2	45·0	26	23	52·6	29	21	13·7
26	3	24·4	28	0	32·5	30	21	53·9
27	4	3·8	29	1	12·3	31	22	34·1

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Ephemeris of the Satellites of Mars, 1890. By A. Marth.

			Phobos.			*Deimos.*				
eenwich Noon.		P	a_1	b_1	u_1-U	a_2	b_2	u_2-U	U	B
1890.		°	″	″	°	″		°	°	°
pr.	14	33·29	18·45	+1·85	343·23	46·19	+4·65	234·09	210·09	+5·78
	16	33·24	18·86	1·89	80·81	47·19	4·73	84·24	210·29	5·76
	18	33·20	19·27	1·93	178·44	48·21	4·84	294·43	210·45	5·76
	20	33·18	19·68	1·98	276·11	49·25	4·96	144·66	210·57	5·78
	22	33·17	20·10	2·04	13·81	50·30	5·11	354·94	210·64	5·83
	24	33·18	20·52	2·11	111·55	51·36	5·28	205·25	210·67	5·90
	26	33·20	20·95	2·19	209·33	52·43	5·48	55·61	210·66	6·00
	28	33·24	21·38	2·28	307·15	53·50	5·71	266·01	210·61	6·12
	30	33·30	21·80	2·38	45·02	54·56	5·96	116·45	210·51	6·27
ay	2	33·37	22·23	+2·49	142·93	55·62	+6·24	326·93	210·37	+6·44
	4	33·46	22·65	2·62	240·87	56·67	6·55	177·46	210·18	6·63
	6	33·56	23·06	2·76	338·85	57·71	6·89	28·03	209·95	6·85
	8	33·68	23·46	2·90	76·88	58·72	7·26	238·65	209·67	7·10
	10	33·81	23·85	3·06	174·95	59·70	7·66	89·31	209·36	7·37
	12	33·96	24·23	3·23	273·05	60·64	8·08	300·00	209·00	7·66
	14	34·12	24·59	3·41	11·19	61·54	8·53	150·74	208·60	7·97
	16	34·29	24·93	3·60	109·36	62·39	9·00	1·51	208·17	8·30
	18	34·47	25·25	3·80	207·56	63·18	9·49	212·31	207·70	8·64
	20	34·65	25·54	4·00	305·79	63·90	10·00	63·14	207·20	9·00
	22	34·84	25·80	4·20	44·04	64·55	10·52	274·00	206·68	9·38
	24	35·03	26·03	4·41	142·30	65·13	11·04	124·88	206·13	9·76
	26	35·22	26·22	4·62	240·58	65·62	11·56	335·78	205·56	10·14
	28	35·41	26·38	4·82	338·86	66·02	12·07	186·69	204·98	10·53
	30	35·60	26·51	5·02	77·15	66·33	12·57	37·60	204·40	10·92
une	1	35·78	26·60	+5·21	175·44	66·55	+13·05	248·51	203·81	+11·31
	3	35·95	26·65	5·40	273·72	66·68	13·51	99·42	203·23	11·69
	5	36·12	26·66	5·57	11·98	66·72	13·94	310·32	202·65	12·06
	7	36·28	26·64	5·73	110·23	66·67	14·33	161·21	202·09	12·42
	9	36·43	26·58	5·87	208·45	66·53	14·69	12·07	201·55	12·76
	11	36·57	26·49	6·00	306·65	66·30	15·01	222·91	201·03	13·09
	13	36·69	26·37	6·11	44·82	65·99	15·29	73·72	200·54	13·39
	15	36·81	26·21	6·20	142·94	65·60	15·52	284·50	200·08	13·68
	17	36·91	26·03	6·27	241·03	65·14	15·70	135·24	199·66	13·95
	19	37·00	25·82	6·33	339·07	64·62	15·84	345·94	199·28	14·19
	21	37·08	25·59	6·36	77·07	64·04	15·93	196·59	198·94	14·40